Living in the Virtual Conference Room

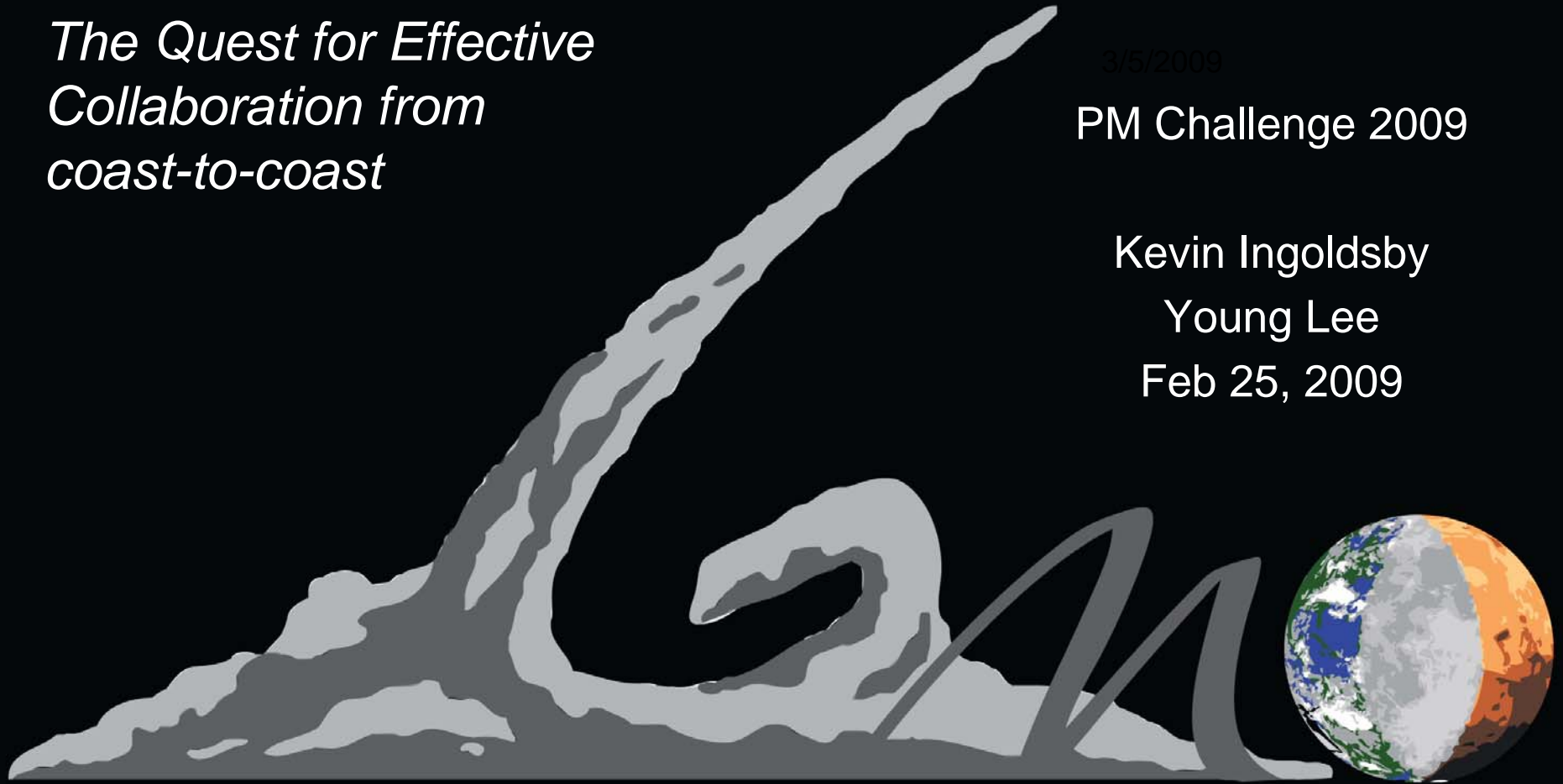*The Quest for Effective Collaboration from coast-to-coast*

3/5/2009

PM Challenge 2009

Kevin Ingoldsby

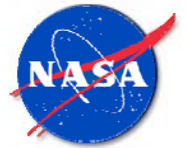Young Lee

Feb 25, 2009

GROUND & MISSION OPERATIONS SYSTEMS INTEGRATION GROUP

Virtual Collaboration Team

- *The Coast-to-Coast, Nation-wide Ground and Mission Operations (GMO) Systems Integration Group (SIG) was initially formed in early 2006*

- *Since then, this team has undergone several transformations including leadership changes, membership turnovers, organizational transfer, mission creep and scope growth.*

- *Throughout this growth and turmoil, the one constant, which has contributed to many successes of the SIG, has been the team's reliance and skill at harnessing the virtual collaboration tools, which were made available to the team by the Constellation Program.*

- *One of the critical challenges of maintaining the team's high performance is "keeping everyone on the same page" to promote effective communication and shared information.*

This session will discuss how the team has combined electronic mail, telecons & virtual on-line meeting tools, and an evolving Web 2.0 collaboration Wiki site to meet the GMO SIG's needs building synergy in a small team to provide high-performance results.
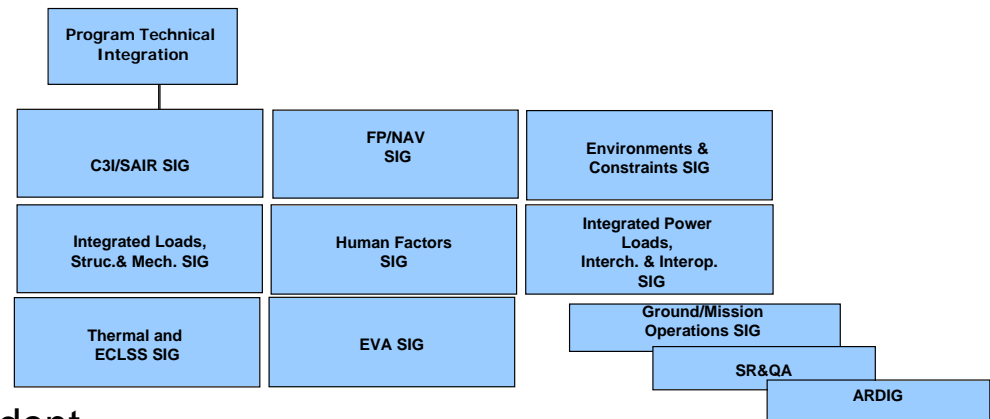
Constellation Program
Systems Integration Groups (SIGs)

♦ **Charter**

- Formed under the Program Technical Integration Group in the Constellation Systems Engineering and Integration (SE&I) office
- Align specific systems and functions - environments and constraints, thermal or power
- Align with a category of functions or requirements sets - human systems, supportability, operability and affordability or Ground and Mission Operations

♦ **Main Functions**

- Represent Level II program requirements
- Interface with and coordinate and allocate these requirements to Level III projects
- Provide horizontal integration across the program, requirements and analysis groups for interdependent requirements and analysis management
- Provide vertical integration across the projects

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│ Program Technical  │
│    Integration     │
└─────────┬──────────┘
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│   C3I/SAIR SIG  │  │   FP/NAV SIG    │  │   Environments &     │
│                 │  │                 │  │   Constraints SIG    │
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│ Integrated Loads,│ │  Human Factors  │  │  Integrated Power    │
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│  Thermal and    │  │    EVA SIG      │  │  Ground/Mission      │
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Ground and Mission Operations Systems Integration Group

◆ **Responsible for the formulation, maturation and verification of Operational-focused System Requirements for the Constellation Program.**

  ▪ **Kennedy Space Center (KSC) – 3.0**

    Ground Operations:

    • Vehicle Assembly, Integrated Test, Launch and Recovery

  ▪ **Johnson Space Center (JSC) – 2.0**

    Mission Operations for Plan-Train-Fly:

    • Mission Control Center

    • Planning Systems, Simulators and Trainers

  ▪ **Jet Propulsion Laboratory (JPL) – 2.0**

    In-Space and Concurrent Operations:

    • Operations Analysis, Systems Integration, Operations Architecture

Team History

- Formed at initial Program SE&I Face-to-Face meetings in Houston
  - One of 13 groups forming core group to formulate Architecture-Level system requirements for Cx Program
  - Initial title – "Ground Operations/Mission Operations/Training and Execution"
  - Also known as "<u>Team #9</u>" *<the number lives on…>*
  - Co-lead by JSC and KSC reps
- Program SRR – Autumn 2006
  - JSC co-lead changed
  - Team acquired our very own Telecon and WebX numbers
  - Daily Telecons
  - Engineering by spreadsheet
  - Known as "GOMO" – sometimes called "MOGO" *<we <u>hated</u> that one…>*
- Stretch Requirements Formulation
  - KSC co-lead change
  - Intense 6-month period of TIMs, virtual meetings, Change request drafting, comment review & disposition, Technical coordination, final all-day program control board decisions
  - This effort melded the team and matured its members
  - Organizational reporting structure changed (SE&I to OI)

Maturing the Team Dynamics

- ◆ **Post Stretch season of Project SRRs**
  - ▪ **Major Program Milestones**
    - Program and Project System Definition Reviews (SDR)
    - Integrated Stack TIM (IS TIM)
    - Program, Project and Element-level Preliminary Design Reviews (PDR)
  - ▪ **New JSC-Co lead**

- ◆ **Integrated Stack TIM**
  - ▪ **Two weeks of intense activity**
  - ▪ **GMO arrived on the big stage**
  - ▪ **Responsible for 10 of 42 splinter sessions to resolve technical issues between Flight and Ground Projects**

- ◆ **SDR to PDR**
  - ▪ **Team stabilizes**
  - ▪ **Working routine and battle rhythm matures**
  - ▪ **Time at last for reflection**

GMO Organizational Events

- ◆ **Held the first GMO "Virtual Retreat" in 2007 via Telecon**
  - ▪ **Focused on internal processes**
  - ▪ **Established vision & mission statement**
  - ▪ **Drafted SIG charter and team member roles/responsibilities**
- ◆ **Held GMO "Face-to-Face Retreat" in 2008 at JPL**
  - ▪ **Focused on clarifying and evaluating SIG's job by identifying and implementing improvements with the goal of increased team's job satisfaction, increased task productivity that brings increased value to the Constellation Program**

GMO SIG Challenges
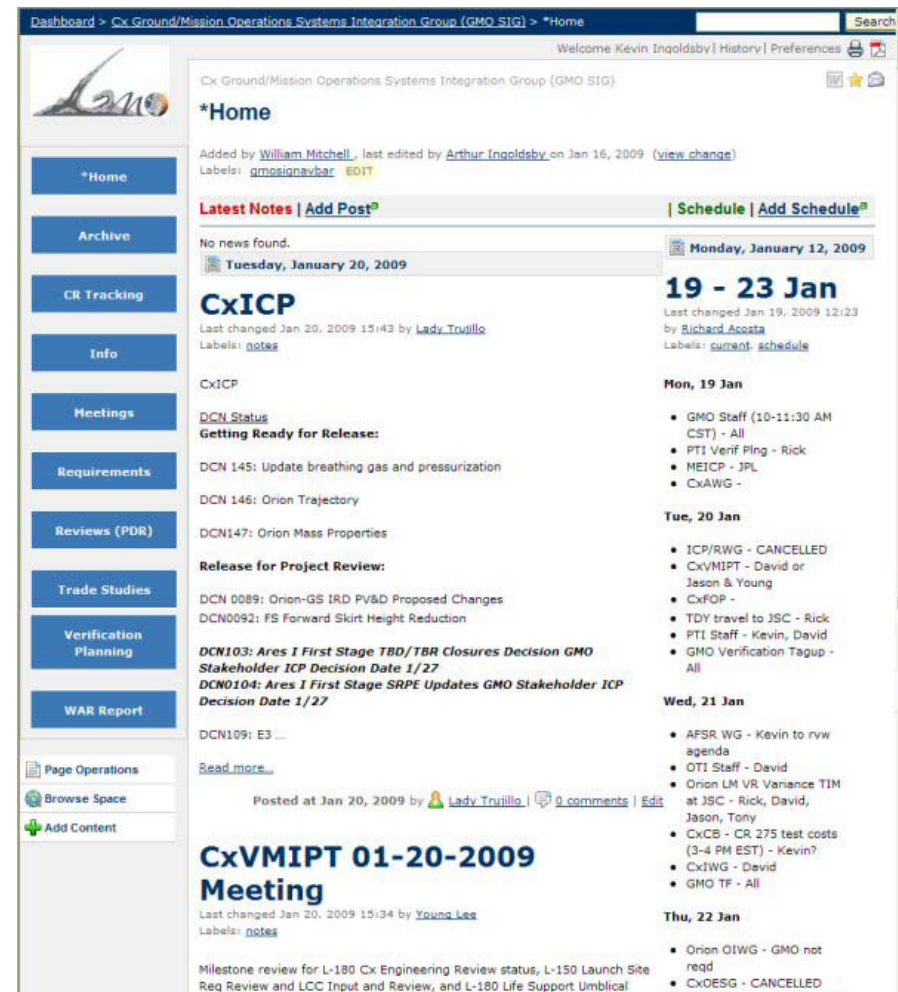
- **Meeting Organizational Expectations with Limited Resources**
  - **Finding ways to meet two major Level II organizations' priorities**
    - Operations Test and Integration Office (OT&I)
      - **Operations Engineering Entity to Flight Operations focused org**
      - **Direct reporting and funding source**
    - Systems Engineering and Integration Office (SE&I)
      - **Operations Team Entity to Systems Engineering focused org**
      - **Pseudo SE&I team**
  - **Major Program Architectural System Requirement Owner**
    - Program and project Milestone reviews
    - Project level Technical Design Assessments
    - Manage Trade Studies and Analysis
    - System Requirement Verification and Validation Planning
    - Leadership in resolving Integrated Program/Project Issues
    - Evolving Constellation "Communities of Practice" leadership

GMO Wiki 3.0

- ◆ **One of Key Enabler for Team's Major collaboration efforts**
  - Primary written communication means to keep everyone on the same page *to promote effective communication and shared information.*
  - Blog posts
    - Use filter labels
    - Concise, crisp, on-point
  - Filtered pages
    - News posts appear in multiple page views as appropriate
  - Self-managing pages
    - Technical focused
      - Change Requests Tracking
      - Program Requirement Management
      - Program Trade Studies
      - Verification Planning
    - **Administration focused**
      - Archiving information
      - Meetings
      - Weekly Activity Reports
      - General information

Telecons

- ◆ Agendas
  - ▪ Meeting Invitations should include Purpose, Time Estimate and topic lists
  - ▪ Time should be adhered to allow stakeholders to participate when needed
 - ▪ Strive for advance notice (pop-ups happen, but cannot become routine)
- ◆ Scheduling
  - ▪ Be aware of your membership's lives
  - ▪ GMO does not schedule telecons to start before 11 AM EST (**8 AM PST**)
  - ▪ GMO does not schedule telecons to last beyond 2 PM PST (**5 PM EST**)
  - ▪ Allow 30 minutes for lunch at each site – Examples:
    - • **Blackout zone at 12:30-1 PM EST (11:30-12:00 CST)**
    - • **Blackout zone at 12:30-1 PM PST**
- ◆ Norms
  - ▪ Mute buttons are your best friend
  - ▪ Remember to Un-Mute before speaking
  - ▪ Take roll at start, recap at finish
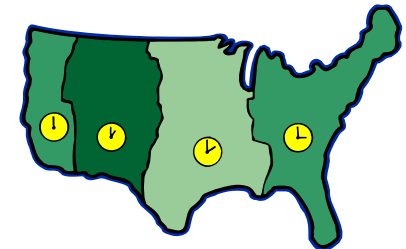
Virtual Meetings
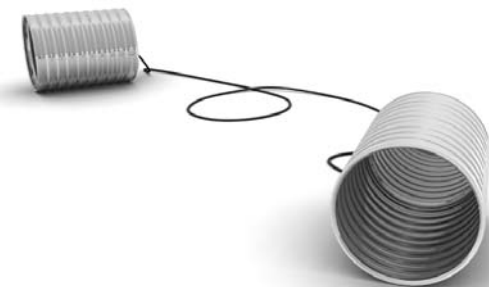
- ◆ **WebX setup**
  - ▪ **Get information out**
  - ▪ **Start 5 minutes early**
  - ▪ **Do not post Host Key codes in invites**
  - ▪ **Desktop sharing font size and screen size for readability**
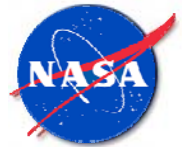- ◆ **Accompanying Telecon**
  - ▪ **Do not post leader pass-codes in invites**
  - ▪ **Some attendees will use, if they disconnect early, telecon will drop for ALL**

- ◆ **Norms**
  - ▪ **Use the Chat feature with care – WebX defaults to all in your 1st reply**

Electronic mail

- ◆ Distribution Lists
  - ▪ Do not abuse Distribution Lists
  - ▪ Keep lists current – many changes can occur
  - ▪ Pick the correct list
- ◆ Forwarding
  - ▪ Make sure if you intend to forward an attachment that it will ACTUALLY make the trip
  - ▪ Trim excess lines if possible
- ◆ Attachments
  - ▪ File larger than 2 Mbytes? Consider posting to server and sending a link instead
  - ▪ Encryption required for SBU materials – better to send link to Windchill container
- ◆ Replies
  - ▪ Reply All when everyone needs to read it
  - ▪ Replying to sender only breaks the communication to others addressed
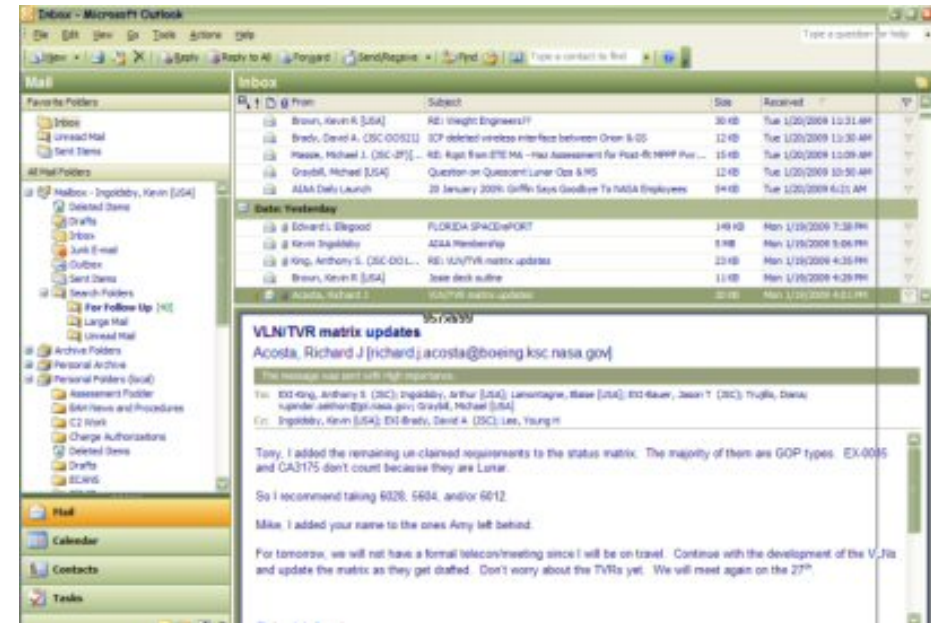
Travel

- ◆ **Planning**
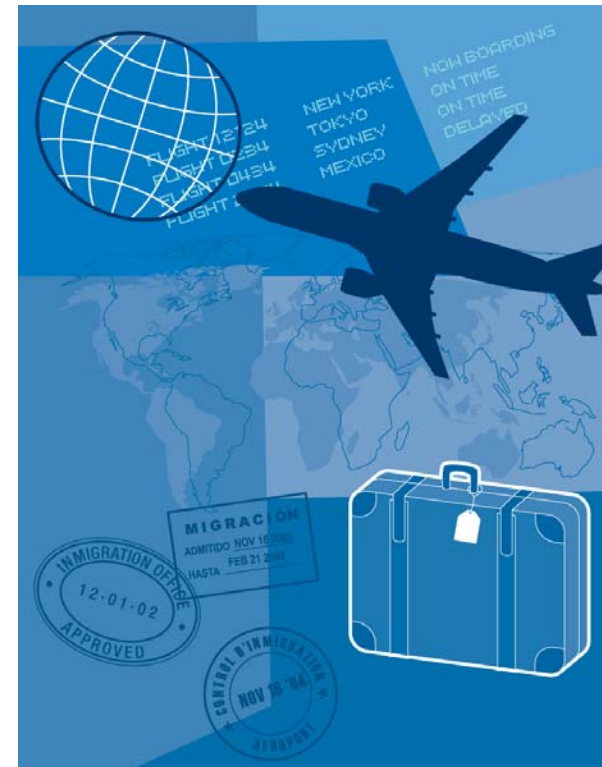 - ▪ **Allow time for remote travelers**
  - ▪ **Don't start before 1 PM at destination on a Monday**
  - ▪ **Coast-to-coast considerations – don't drive "Oh-Dark-Thirty" flight departures times on west coast participants**
- ◆ **Purpose**
  - ▪ **Virtual works, but can't yet match the interpersonal exchange**
  - ▪ **Try to hold a retreat-like event each year if budget and schedule allow**

Program Boards & Panels

- ◆ **Coverage**
  - ▪ **Constellation Program is in it's "springtime" – the blossoming of dozens of panels and working groups**
  - ▪ **Plan for coverage – check agenda topics, time and materials**
  - ▪ **Right-size – only send enough people to cover your responsibilities**
  - ▪ **Be selective – drop unproductive meetings**
- ◆ **Reporting**
  - ▪ **GMO uses live Wiki posts to report near real-time notes**
  - ▪ **Post attachments and use commenting dialog for follow-up**
  - ▪ **Post follow-up summary notes while your impressions are still fresh**

GMO Recurring Meetings (all times ET)

Day	Start Time	End Time	Title	Frequency	Attendance
Mon	1100	1230	GMO SIG Core Staff	Weekly	SIG Core Team
Mon	1400	1800	Cx Analysis Working Group (CxAWG)	Weekly	SIG JPL Team
Mon	1400	1700	Msn Engineering Integration Control Board (MEICB)	Weekly	SIG JPL Team
Tue	?	?	OTI Ops Tagup	Weekly	SIG Leads (optional)
Tue	0930	1400	Interface Control Panel(ICP)	Weekly	SIG Leads (as reqd per agenda), Dippolito, Acosta,
Wed	1100	1230	Ops & Test Integration (OTI) Staff Mtg	Weekly	SIG Leads
Tue	1130	1300	Ops Con WG (OCWG)	Bi-Weekly	SIG Leads
Tue	1400	1800	Flt Ops Panel (CxFOP)	Bi-Weekly	Campbell, Brady
Tue	1400	1545	PTI Staff	Weekly	SIG Leads

537x532

Team Building

- ◆ **Awards**
  - ▪ **Recognition is crucial to team morale**
  - ▪ **Create a team award**
  - ▪ **Use program award programs for more significant accomplishments**
  - ▪ **Document awards and publicize them**
- ◆ **Graphics**
  - ▪ **A team logo creates identity**
  - ▪ **Build a consistent "team brand" identity in web, documents and presentations**
- ◆ **Apparel**
  - ▪ **Shirts, hats, t-shirts etc.**
  - ▪ **Keep it fresh – make available to all new members**
- ◆ **Meals**
  - ▪ **During travel – arrange for a social evening to build networking of members**
  - ▪ **Don't over-schedule, allow for flexible individual plans**

Needs – Evolving with the program

- ◆ **Reorganizations**
  - ▪ **Re-orgs are an annual way of life in large projects**
  - ▪ **Get information early, share with team as much as possible**
  - ▪ **Uncertainty creates tension – don't allow communication voids to fester**
- ◆ **Changing responsibilities**
  - ▪ **Priorities change – plan to adjust**
- ◆ **Training**
  - ▪ **Individual development actions**
  - ▪ **Team learning for tools and techniques**
- ◆ **Transitions**
  - ▪ **Turnover in personnel**
  - ▪ **Growth from within**
  - ▪ **Build your second team**

MARS CLIMATE ORBITER